



# **CAISO 2010/2011 Transmission Plan: Implications of ARRA Projects**

**CAISO Board Meeting**

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## California Energy Commission

# Major Renewable Energy Projects Permitted in California - 2010

Project	Capacity (MW)	Annual RE generation (MWh)	Annual GHG emissions avoided (tons)	Peak Jobs	Permanent Jobs
Abengoa	250	630,000	261,450	1,162	68
Beacon	250	600,000	249,000	836	66
Blythe	1000	2,100,000	871,500	1,066	295
Calico	663	1,435,000	595,525	400	136
Genesis	250	600,000	249,000	1,085	50
Imperial Valley	709	1,525,000	632,875	900	164
Ivanpah	370	880,000	365,200	1,000	86
Palen	500	1,000,000	415,000	566	134
Rice	150	450,000	186,750	280	47
<i>Alta (Oak Creek Mojave)</i>	<i>800</i>	<i>1,787,500</i>	<i>741,813</i>	<i>Unavailable</i>	<i>50</i>
<i>AV Solar Ranch One</i>	<i>245</i>	<i>515,000</i>	<i>140,000</i>	<i>300</i>	<i>20</i>
<b>Total</b>	<b>5,200</b>	<b>11,500,000*</b>	<b>4,700,000**</b>	<b>7,600</b>	<b>1,100</b>

\*Equals about 25% of new renewable generation needed to meet the 33% RPS.

\*\* Represents about 22% of the avoided GHG emission reduction accounted for RPS under the ARB's 2008 Climate Change Scoping Plan



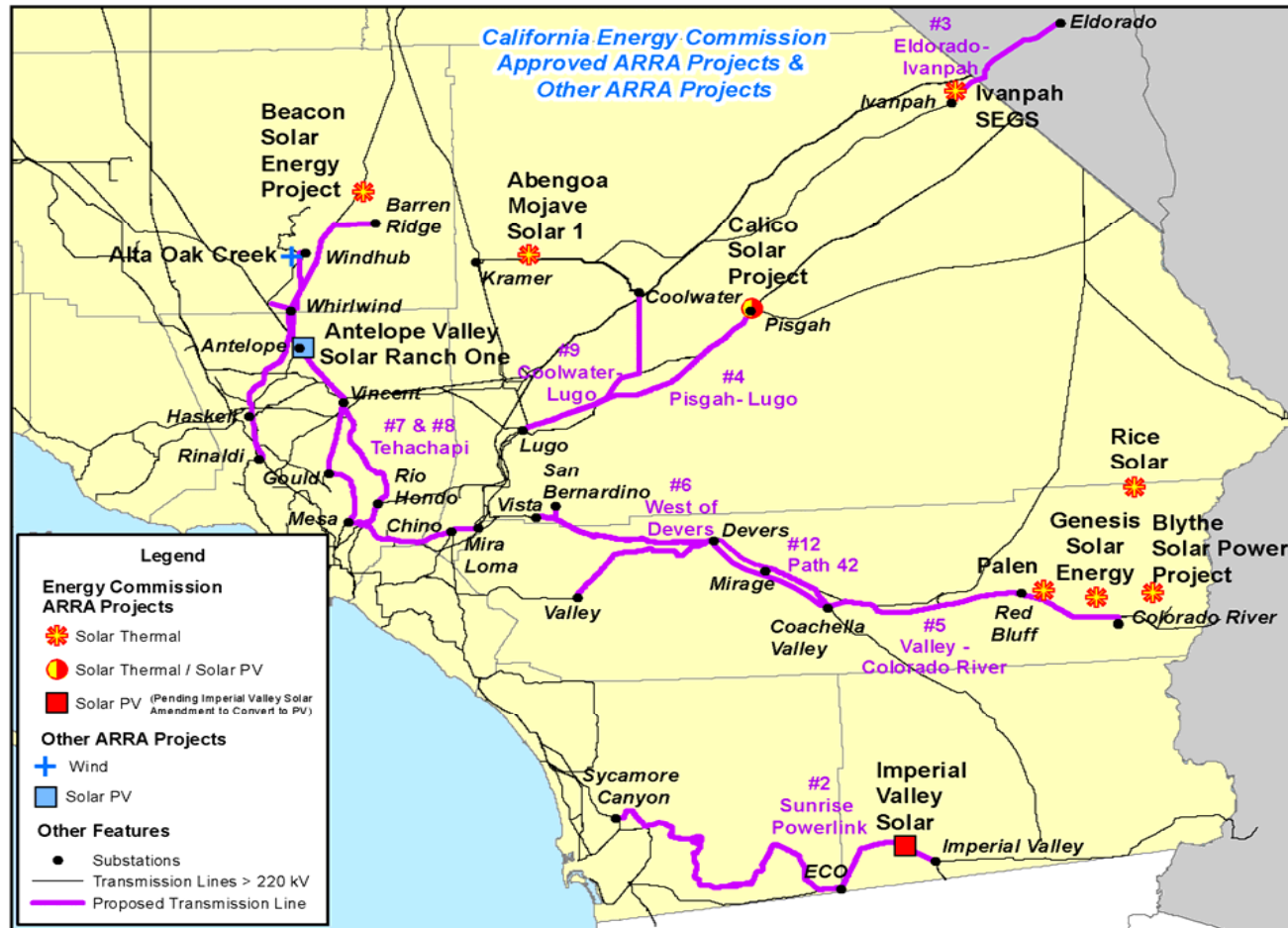
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Project	Estimated Start of Construction Date	DOE Recovery Act Loan	Substation or Transmission Line Interconnect	Current On-line Date (Transmission)
Abengoa	June 2011	Pending	Coolwater-Kramer 230kv line and new Coolwater-Lugo 230 kV line	2017
Beacon	Unavailable	Pending	Barren Ridge 230 kV Substation	2/1/2012
Blythe	June 2011	\$2.105 billion	Colorado River Substation and West of Devers Upgrade	2013; 2017
Calico	4Q 2011	Pending	Pisgah Substation and Pisgah -Lugo upgrade	2017
Genesis	Unavailable	Pending	Colorado River Substation and West of Devers Upgrade	2013; 2017
Imperial Valley	1Q 2011	Pending	Imperial Valley Substation Imperial Valley Substation	5/31/12; 5/1/12
Ivanpah	10/8/2010	\$1.6 billion	Loop new sub connecting to Eldorado-Mtn Pass 115kV line Ivanpah Substation 230kV El Dorado – Ivanpah Transmission Project	6/30/2010 6/30/2012 2013
Palen	Unavailable	Pending	Red Bluff Substation and West of Devers Upgrade	7/1/2013; 2017
Rice	3Q 2011	Pending	Plan to interconnect into WAPA sub.	No CAISO upgrades needed
<i>Alta (Oak Creek Mojave)</i>	<i>Unavailable</i>	<i>Pending</i>	<i>Whirlwind Substation 230kV</i>	2012
<i>AV Solar Ranch One</i>	<i>Unavailable</i>	<i>Pending</i>	<i>Tehachapi Conceptual Substation #1</i>	Unavailable



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## ARRA Projects and Proposed Transmission Upgrades





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## Transmission underway to meet 33% RPS in 2020



Transmission upgrade		Approval status		Renewable Potential		Online
		ISO	CPUC	MW	TWh/Yr	
1	Carrizo-Midway	Pending LGIA	Not yet filed	900	2.1	2012
2	Sunrise Powerlink	Approved	Approved	1,700	4.1	2012
3	Eldorado-Ivanpah	LGIA	Approved	1,400	3.6	2013
4	Pisgah-Lugo	LGIA	Not yet filed**	1,750	4.1	2017
5	Valley-Colorado River	Approved	Approved*	4,700	8.6	2013
6	West of Devers	LGIA	Not yet filed			2017
7	Tehachapi	Approved	Approved	4,500	15.2	2015
8	Tehachapi Wind/Solar Diversity	N/A	N/A	1,000	3.0	2015
9	Cool Water-Lugo	Pending LGIA	Not yet filed	600	1.4	2018
10	South Contra Costa	LGIA	Not yet filed	300	0.8	2015
11	Borden-Gregg	LGIA	Not yet filed	800	2.0	2015
12	Path 42	Pending approval	Not yet filed	1,400	3.5	2015
Other-Outside of ISO Grid		N/A	N/A	3,300	8.4	
<b>Total</b>				<b>22,350</b>	<b>56.8</b>	
<b>TWh/year needed in ISO area to meet 33% goal:</b>						<b>44</b>



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# Other Projects in GIP Queue Interconnecting to Transmission Upgrades

ISO #	Transmission Project	# of Projects in GIP Queue	MW in GIP Queue
1	Carrizo – Midway 230 kV	4	800 MW
3	El Dorado - Ivanpah	10	2,981 MW
9	Coolwater - Lugo	6	800 MW
4	Pisgah - Lugo	6	1,971 MW
5, 6	Colorado River – Devers (Valley) – West of Devers	29	10,130 MW
7, 8	Tehachapi Regional Transmission Project	101	10,409 MW
2	Sunrise Powerlink	46	11,785 MW
10	South of Contra Costa	20	2,093 MW
12	Path 42	42	2,969 MW